STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC HEALTH
WALTER M. DICKIE, M. D., DIRECTOR

# Weekly Bulletin

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Entered as second-class matter February 21, 1922, at the post office at Sacramento, California, under the Act of August 24, 1912.

Acceptance for mailing at special rate of postage provided for in Section 1103, Act of October 3, 1917.

Vol. VII, No. 26 — August 4, 1928 — GUY P. JONES EDITOR

## SEWAGE DISPOSAL IN THE COUNTRY

Many inquiries relative to the installation of septic tanks in the rural districts are received by the State Department of Public Health. The following questions and answers prepared by Chester G. Gillespie, Chief of the Bureau of Sanitary Engineering, supply considerable able information upon this subject:

(1) Is septic tank water pure and is it safe to be used for drinking purposes?

*Answer:* No. A septic tank is merely a settling tank, adapted to use with sewage. It partly clarifies the sewage by settling out the heavy solids. Bacteria of all kinds pass through it with the water; so also does a large amount of dissolved and decaying organic matter and gasses of decomposition. The water is dangerous to health and a source of nuisance and odor unless such water is disposed of underground.

(2) Do septic tanks ever need cleaning?

*Answer:* Yes. All septic tanks gradually fill up with the deposits which accumulate in them and when full their effectiveness to settle out the sewage solids is practically nothing. Part of the solids digest, but there is a sort of residue which will not digest. It amounts to about two cubic feet per person per year. From this calculation, an estimate may be made of the time that will probably be required for the tank to fill with solids. Septic tanks used for only a part of the year will fill less quickly than those in use all the time.

(3) Is it necessary to inoculate septic tanks to make them work properly?

*Answer:* No. It is merely necessary to proceed to use them. The digestive process establishes itself as fully as is possible. There are no chemicals necessary and no precautions, other than those described herewith, which should be taken.

(4) What substances are injurious in septic tanks?

*Answer:* Large amounts of grease wastes or large amounts of strong disinfectants prevent some of the digestion in a septic tank, and therefore hasten the accumulation of the solid sludge. As a matter of simplicity, all wastes are usually run through the septic tank together, but there is no harm, and there is some advantage in constructing two or more septic tanks—one to receive the toilet wastes and the others for remaining wastes about the premises. The toilet waste is the most obnoxious and dangerous, since it may carry typhoid, diarrhea, etc. It is sometimes possible to get rid of the small amount of waste from the toilets by a combination of septic tank and cesspool in situations where a sanitary disposal of all the wastes may be difficult.

(5) Are several compartments in a septic tank an improvement?

*Answer:* No. A number of compartments are of no particular advantage over a single compartment and, regardless of the number of compartments, the sewage is dangerous and offensive.

(6) Is it permissible and lawful to run septic tank effluent into streams?

*Answer:* It is contrary to law and a great menace to health to run septic tank water or sewage into streams, and it is unnecessary to do so. Homes and resorts can easily make a sanitary disposal of their sewage underground.

(7) Do running streams quickly become pure?

*Answer:* No. The bacterial contamination decreases rapidly at first, then slowly. The time required for a stream to become safe bacterially is beyond reach. Besides there are generally repeated contaminations. Redemption of the water by purification is possible to towns and cities, but difficult on a small scale.

(8) Is it permissible and lawful to run sewage into old wells, or into wells which reach to water-bearing gravel?

*Answer:* No. It is not permissible nor lawful to run sewage into wells nor even into deep cesspools which may thereby introduce sewage into a water-bearing stratum, which is or may in future be used by someone for a well water supply. Sewage introduced into water-bearing gravels may infect water supplies several hundred to several thousand feet away; the distance depends upon the degree of intervening filtration. In dry or slightly damp soil or fine sand, filtration of the sewage through just a few feet of the material removes all danger. In gravel or in formations subject to cracks and fissures, the distance pollution may be carried becomes much greater. Pollution travels farther in wet ground than in dry or damp ground. It is important to realize that water wells, as ordinarily built, admit some surface water and that sewage disposal which pollutes surface water may thus pollute nearby water wells.

The important thing in sewage disposal is to first settle the sewage in a septic tank, (clarify it) and then run the water into a leaching system or cesspool where the sewage water may soak away into loose, dry or damp soil. Where the surface water is near the surface, the cesspool or leaching system must lie close to the surface of the ground and above the ground water plane. In rock or hardpan formations, this leaching system should likewise lie in the loosest soil.

(9) Can sewage be used to water the garden?

*Answer:* No. The sewage when run out on open ground may contaminate vegetables. Flies and chickens may carry it in such a way as to pollute food or water supplies.

**Requisites for Good Sewage Disposal.**

For resorts, homes and institutions, there is advised the use of a septic tank and a leaching system whereby the liquid leaving the sceptic tank may be absorbed by the soil itself without any occasion for the sewage ever appearing upon the surface. From the time the sewage leaves the fixture in the house it should never be seen again. Obviously, the success of such a system hinges on how readily the particular soil will take up the sewage and how well the sewage has been prepared to be readily absorbed. The system requires for its success:

1. An available area of about .1 to .5 acre per 100 persons, depending upon the nature of the soil.
2. A loamy, sandy, absorptive soil, with good under drainage.
3. Absence of bed rock, hardpan and of ground water for a depth of at least 3 feet.
4. A plumbing installation economical in the use of water.
5. Proper size and design of septic tank and leaching sysem. These units can not be too large and the most porous soil in the vicinity should be used.

If the soil is inclined to be tight or poorly underdrained, there is little likelihood that the disposal will prove successful. Whenever the problem of sewage disposal is so complex that the simple method herein outlined is of doubtful efficiency, it will be wise to consult the State Board of Health for further and special advice. Some of the alternative steps which may then be considered are:

1. Separation of greasy wastes from the highly dangerous toilet waste, running toilet waste to a system as outlined above, and disposing of the bath and kitchen water separately in the cleanest and least offensive manner. The latter should at least pass through a septic tank and then to a cesspool, or be used for irrigation.
2. Use of sanitary privies built properly and kept sanitary, instead of water-flushed toilets, disposing of bath and kitchen waste as in 1.
3. Use of high-grade sewage treatment, including tankage and filtration through fine or coarse grained filters. The cost

of this system may range from $50 per person upwards, for small installations. A serious drawback is that such works require more regular attention for their success than they are apt to receive.

**Rural Plumbing.**

Rural plumbing should be laid out to make the most economical use of water, not only because the water itself is expensive, but because the difficulty of sewage disposal increases as the amount of water increases. Spring closing faucets and the avoidance of all waste and leakage in fixtures are a necessity. The following quotation from a monthly bulletin of the Michigan State Board of Health, written by George C. Whipple, professor of sanitary engineering, Harvard University, is timely:

"A point which I wish to emphasize in connection with rural plumbing is that when water is taken from a well, pumped to the house, and returned to a cesspool or tank in the ground, the design of the plumbing system should be different from that now used in city houses. In the first place, fixtures should be designed to use less water. A modern American water closet uses about five gallons at each flush. It is possible to design one that will use only half as much water and be satisfactory enough for all practical purposes, and be cheaper than the standard type. European closets often use only one or two gallons for a flush. Wash basins should be designed to use less water and faucets should be smaller. Pressure should be low. Saving of water is important in the city, but it may mean everything to a farm plumbing system when the well is nearly dry. Roof water can sometimes be used to advantage for flushing purposes as well as for washing. Consideration should be given to the separation of the water closet wastes from the greasy wastes, and this will modify the design of the drainage system. It is not necessary that the three fixtures—water closet, basin and bath—be placed in one room as in a city house, and if there are to be two drainage systems it may be cheaper and more convenient to the owner to have the kitchen sink waste separate from the water closet waste. Country buildings are usually low, and the elaborate provisions of venting fixtures necessary to some extent in a ctiy house of several stories are unnecessary and out of place in a country house. Rural plumbing systems should be so simple that the owner can make his own minor repairs.

"City plumbers are extending their work into rural districts. It is an advance movement in sanitation, but if it is to be successful on a large scale greater attention must be given to rural conditions. The city plumber has an indoor job; the country plumber has both an indoor and an outdoor job. The city plumber has only to connect the drain to an existing sewer; the country plumber should make sewage disposal a part of his work. This will require an extension of his ideas. What he may lose by the installation of simpler plumbing outfits he will gain because of the outside work, and because of the increased volume of all work."

**(Continued in next issue.)**

## Establish New Quarantine on Mussels.

Examination of mussels, made recently by Dr. K. F. Meyer, director of the Hooper Foundation for Medical Research and consulting bacteriologist of the California Department of Public Health, has determined the presence of a toxic condition in these crustaceans. The following quarantine order was issued immediately upon the determination of these findings. The general public is warned to beware of eating mussels taken from the coast district specified in the quarantine order:

TO ALL HEALTH OFFICERS

Examinations of mussels gathered recently along the California coast have revealed a state of toxicity in these shellfish. Accordingly, a quarantine of all mussels along the California coast from Del Norte County to Monterey County, inclusive, is established. All health officers and food inspectors are hereby instructed to enforce the provisions of this quarantine and to prohibit the sale or offering for sale of mussels gathered in the district specified above.

Very truly yours,

WALTER M. DICKIE, M.D.,
Director of Public Health.

## San Bernardino County Has New Health Officer.

Dr. S. B. Richards has been appointed health officer of San Bernardino County to succeed Dr. Emil W. Meyer.

## MORBIDITY*

**Diphtheria.**

50 cases of diphtheria have been reported, as follows: Alameda 2, Berkeley 1, Oakland 3, Amador County 3, Fresno County 1, Fresno 1, Los Angeles County 7, Claremont 1, Los Angeles 13, Pasadena 3, Mill Valley 1, Salinas 1, Orange County 2, Riverside 1, Sacramento County 1, Colton 1, San Diego 2, San

*From reports received on July 30th and 31st for week ending July 28th.

Francisco 2, Stockton 1, San Mateo County 1, Yuba County 1, Marysville 1.

**Scarlet Fever.**

57 cases of scarlet fever have been reported, as follows: Berkeley 2,. Oakland 6, Fresno County 2, Fresno 4, Kern County 1, Los Angeles County 5, Covina 1, Long Beach 2, Los Angeles 16, Santa Monica 2, South Gate 1, Marin County 1, Riverside 1, Sacramento 1, San Diego 2, San Francisco 4, San Joaquin County 1, Stockton 3, Santa Barbara County 2.

**Measles.**

19 cases of measles have been reported, as follows: Oakland 2, Humboldt County 1, Kern County 1, Los Angeles County 1, Arcadia 1, Los Angeles 6, Pasadena 1, West Covina 1, Redlands 1, San Francisco 3, Santa Rosa 1.

**Smallpox.**

15 cases of smallpox have been reported, as follows: Oakland 3, Kern County 3, Monterey County 2, Sacramento 1, Ontario 1, San Diego County 4, California 1.

**Typhoid Fever.**

10 cases of typhoid fever have been reported, as follows: Fresno County 1, Los Angeles 3, Sacramento County 2, Redlands 1, San Francisco 2, San Mateo County 1.

**Whooping Cough**

189 cases of whooping cough have been reported, as follows: Alameda 2, Oakland 4, Bakersfield 1, Los Angeles County 19, Arcadia 2, Compton 1, Huntington Park 2, Long Beach 6, Los Angeles 49, Monrovia 6, Pasadena 1, San Fernando 2, Torrance 1, Bell 1, Marin County 2, Orange County 2, Anaheim 1, Fullerton 2, Santa Ana 2, Riverside 1, Sacramento 7, San Diego County 7, Chula Vista 3, La Mesa 1, National City 1, San Diego 35, San Francisco 12, San Joaquin County 1, Santa Barbara County 2, Lompoc 1, Santa Barbara 7, Mountain View 1, Palo Alto 2, San Jose 2.

**Meningitis (Epidemic).**

7 cases of epidemic meningitis have been reported, as follows: Huntington Park 1, Los Angeles 1, Orange County 1, Anaheim 1, Sacramento 1, San Diego 1, San Francisco 1.

**Poliomyelitis.**

7 cases of poliomyelitis have been reported, as follows: Burbank 1, Los Angeles 2, Mill Valley 3, San Diego 1.

**Tularemia.**

Berkeley reported one case of tularemia.

**Actinomycosis.**

Los Angeles reported one case of actinomycosis.

## COMMUNICABLE DISEASE REPORTS

| Disease | 1928 | | | | 1927 | | | |
|---|---|---|---|---|---|---|---|---|
| | Week ending | | | Reports for week ending July 28 received by July 31 | Week ending | | | Reports for week ending July 30 received by Aug. 2 |
| | July 7 | July 14 | July 21 | | July 9 | July 16 | July 23 | |
| Actinomycosis | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 |
| Anthrax | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Botulism | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Chickenpox | 98 | 112 | 92 | 61 | 88 | 116 | 75 | 82 |
| Diphtheria | 56 | 70 | 52 | 50 | 71 | 79 | 57 | 73 |
| Dysentery (Bacillary) | 7 | 0 | 2 | 0 | 2 | 4 | 1 | 3 |
| Encephalitis (Epidemic) | 0 | 0 | 1 | 0 | 2 | 0 | 1 | 1 |
| Food Poisoning | 7 | 3 | 1 | 0 | 0 | 1 | 75 | 3 |
| German Measles | 40 | 32 | 25 | 22 | 15 | 12 | 14 | 10 |
| Gonococcus Infection | 113 | 106 | 134 | 192 | 119 | 94 | 83 | 74 |
| Influenza | 20 | 8 | 6 | 12 | 9 | 12 | 6 | 3 |
| Jaundice (Epidemic) | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Leprosy | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 |
| Malaria | 4 | 1 | 1 | 0 | 1 | 1 | 2 | 2 |
| Measles | 23 | 20 | 24 | 19 | 217 | 133 | 124 | 77 |
| Meningitis (Epidemic) | 2 | 1 | 4 | 7 | 8 | 3 | 3 | 5 |
| Mumps | 60 | 73 | 60 | 41 | 37 | 39 | 47 | 22 |
| Paratyphoid Fever | 1 | 2 | 6 | 2 | 1 | 0 | 0 | 0 |
| Pneumonia (Lobar) | 29 | 26 | 23 | 24 | 33 | 24 | 32 | 37 |
| Poliomyelitis | 6 | 7 | 1 | 7 | 32 | 50 | 66 | 59 |
| Rabies (Animal) | 11 | 18 | 6 | 7 | 2 | 5 | 1 | 6 |
| Rocky Mt. Spotted Fever | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Scarlet Fever | 65 | 69 | 71 | 57 | 59 | 59 | 71 | 53 |
| Smallpox | 24 | 4 | 24 | 15 | 11 | 19 | 6 | 6 |
| Syphilis | 109 | 122 | 125 | 251 | 122 | 128 | 87 | 73 |
| Tetanus | 4 | 0 | 5 | 3 | 1 | 2 | 2 | 1 |
| Trachoma | 0 | 0 | 2 | 0 | 3 | 1 | 1 | 0 |
| Trichinosis | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Tuberculosis | 175 | 240 | 227 | 190 | 215 | 191 | 188 | 193 |
| Tularemia | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| Typhoid Fever | 20 | 14 | 11 | 10 | 14 | 24 | 16 | 19 |
| Typhus Fever | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Whooping Cough | 135 | 209 | 230 | 189 | 169 | 149 | 143 | 128 |
| Totals | 1,009 | 1,138 | 1,134 | 1,161 | 1,231 | 1,146 | 1,103 | 933 |

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60344 8-28 4600